

Claims

- [c1] 1. Device for reducing the amount of a gas component in an exhaust gas flow of a combustion engine (1) which is adapted for operation by a lean air/fuel mixture, comprising an exhaust pipe (21) for transport of the exhaust gas flow from the engine (1), characterized in that it comprises a separation unit (22) which is arranged along the exhaust pipe (21), which separation unit (22) comprises a wall structure (32) of a material which provides separation of the gas component from the exhaust gas flow by means of a selective passage of the gas component before other gas components in the exhaust gas flow.
- [c2] 2. Device according to claim 1, characterized in that the separation unit (22) comprises an inlet (27) for supply of a reduction agent, which is separated from the incoming exhaust gas flow by means of the wall structure (32), wherein the separation unit (22) provides catalytic reduction of the gas component by means of supply of the reduction agent.
- [c3] 3. Device according to claim 2, characterized in that the inlet (27) of the separation unit (22), via a conduit (28), is connected to a tank (7) forming part of the engine (1) and being intended for the regular fuel of the engine (1), wherein the reduction agent is taken from the fuel.
- [c4] 4. Device according to claim 2, characterized in that the inlet (27) of the separation unit (22), via a conduit, is connected to a separate tank for the reduction agent.
- [c5] 5. Device according to claim 4, characterized in that the separation unit (22) is adapted for feeding in the reduction agent counter-current in relation to the exhaust gas flow.
- [c6] 6. Device according to claim 5, characterized in that the separation unit (22) comprises an outlet (30) which is connected with the inlet (2) of the engine (1) via a conduit (31), for feeding any reduction agent which has not reacted with the gas component out from the separation unit (22) and back to the inlet (2).
- [c7] 7. Device according to claim 6, characterized in that the inlet (27) is connected with an additional conduit (28b) for feeding in fresh air as carrier gas for the

reduction agent.

- [c8] 8. Device according to claim 1, characterized in that the separation unit (22) comprises an outlet (30) which is connected with the inlet (2) of the engine (1) via a conduit (31), for returning the gas component to the inlet (2) after separation from the exhaust gas flow.
- [c9] 9. Device according to claim 8, characterized in that the inlet (27) is connected with an additional conduit (28b) for feeding in fresh air as carrier gas for the gas component.
- [c10] 10. Device according to claim 9, characterized in that the gas component is constituted by an oxide of nitrogen (NO_x compound) in the exhaust gas flow.
- [c11] 11. Device for reducing the amount of a first gas component from a combustion engine (1) which is adapted for operation by a lean air/fuel mixture, comprising an exhaust pipe (21) for transport of the exhaust gas flow from the engine (1), characterized in that it comprises a separation unit (22) which is arranged along the exhaust pipe (21), which separation unit (22) comprises a wall structure (32) of a material which provides separation of a second gas component from the exhaust gas flow by means of a selective passage of the second gas component before other gas components in the exhaust gas flow, and that the separation unit (22) comprises an outlet (30) which is connected with the inlet (2) of the engine (1) via a conduit (31), for return of the second gas component to the inlet (2) after separation from the exhaust gas flow.
- [c12] 12. Device according to claim 11, characterized in that the second gas component is constituted by water.
- [c13] 13. Device according to claim 12, characterized in that the first gas component is constituted by an oxide of nitrogen (NO_x compound) in the exhaust gas flow.
- [c14] 14. Device according to claim 13, wherein the engine (1) is provided in connection with a turbo-aggregate (36) with an exhaust gas operated turbine (37) and a compressor (38) for compression of air which has been fed into the engine (1), characterized in that the conduit (31) is connected to a point

upstream of the compressor (38).

[c15] 15. Device according to claim 14, wherein the function of the engine (1) is controllable by means of a control unit (5), characterized in that the control unit (5) is adapted for supply of the reduction agent essentially continuously during lean operation of the engine (1).

[c16] 16. Device according to claim 15, characterized in that a NO_x sensor (25) is connected to the control unit (5) for detection of the amount of NO_x compounds in the exhaust gas flow.

[c17] 17. Device according to claim 16, characterized in that the control unit (5) is adapted for supply of the reduction agent depending on the amount of the NO_x compound.

[c18] 18. Device according to claim 17, characterized in that the NO_x sensor (25) is utilized during diagnosis of the function regarding reduction of the NO_x compound.

[c19] 19. Device according to claim 18, characterized in that the engine (1) is of the "lean-burn" type.

[c20] 20. Device according to any one of claim 18, characterized in that the engine is of the diesel engine type.

[c21] 21. Separation unit (22) for reducing the amount of a gas component in a gas flow, characterized in that it comprises a wall structure (32) which comprises material which provides a selective passage of the gas component from the gas flow before other gas components in the gas flow.

[c22] 22. Method for reducing the amount of a gas component in an exhaust gas flow of a combustion engine (1) which is adapted for operation by a lean air/fuel mixture, comprising feeding of the exhaust gas flow from the engine (1) to a separation unit (22), characterized in that it comprises separation of the gas component from the exhaust gas flow in a wall structure (32) comprising material which provides a selective passage of the gas component before other gas components in the exhaust gas flow.

- [c23] 23. Method according to claim 22, characterized in that it comprises supply of a reduction agent to an inlet (27) of the separation unit (22), wherein a supplied reduction agent is separated from the exhaust gas flow by means of the wall structure (32), and catalytic reduction of the gas component by means of the reduction agent.
- [c24] 24. Method according to claim 23, characterized in that the supply of the reduction agent takes place from a tank (7) forming part of the engine (1) and being intended for the regular fuel of the engine (1), wherein the reduction agent is taken from the fuel.
- [c25] 25. Method according to claim 24, characterized in that the reduction agent is fed through the separation unit (22) essentially counter-current in relation to the exhaust gas flow.
- [c26] 26. Method according to claim 25, characterized in that reduction agent which has not reacted with the gas component is fed out from the separation unit (22) and returned to the inlet (2) of the engine (1).
- [c27] 27. Method according to claim 26, characterized in that it comprises feeding in fresh air as carrier gas for the reduction agent.
- [c28] 28. Method according to claim 27, characterized in that the reduction agent is supplied to the separation unit (22) essentially continuously during lean operation of the engine (1).
- [c29] 29. Method according to claim 22, characterized in that it comprises return of the gas component to the inlet (2) via a conduit (31).
- [c30] 30. Method according to claim 29, characterized in that it comprises feeding in fresh air as carrier gas for the gas component.
- [c31] 31. Method according to claim 30, wherein the gas component is constituted by an oxide of nitrogen (NO_x compound) in the exhaust gas flow, characterized in that it comprises detection of the amount of the NO_x compound in the exhaust gas flow.

- [c32] 32. Method according to claim 31, characterized in that the supply of the reduction agent takes place depending on the detected amount of NO_x compounds.
- [c33] 33. Method according to claim 32, characterized in that it comprises a diagnosis of the function regarding reduction of the NO_x compound.
- [c34] 34. Method for reducing the amount of a first gas component from a combustion engine (1) which is adapted for operation by a lean air/fuel mixture, comprising feeding of the exhaust gas flow from the engine (1) to a separation unit (22),
characterized in that it comprises
separation of a second gas component from the exhaust gas flow in a wall structure (32) comprising material which provides a selective passage of the second gas component before other gas components in the exhaust gas flow, and
return of the second gas component to the inlet (2) of the engine (1).
- [c35] 35. Method according to claim 34, characterized in that it comprises
separation of the first gas component and the second gas component in the wall structure, which comprises material which provides a selective passage of the first gas component and the second gas component before other gas components in the exhaust gas flow, and
return of the first gas component and the second gas component to the inlet of the engine.